CABIN JOHN CREEK WATERSHED STUDY

FINAL REPORT

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Executive Summary

The objective of the Cabin John Creek Watershed Study is to evaluate stream and aquatic habitat conditions, and identify and prioritize opportunities to improve water quality and enhance aquatic and riparian habitat conditions in the Cabin John Creek watershed. This study includes both the Bannockburn Branch, which drains into Cabin John Creek, and the Minnehaha Branch, which drains into the Potomac River.

The study focuses upon the following components:

- review of the background data
- Bannockburn Branch watershed assessment
- development of a watershed hydrologic model
- identification and prioritization of opportunities to implement stormwater management (SWM), best management practices (BMP's), and stream restoration opportunities
- development of concept designs for priority SWM and stream restoration opportunities
- identification of small scale restoration (i.e., reforestation) opportunities which can be implemented by citizen organizations

The study produced a list of (a) stream restoration and (b) stormwater management retrofit projects for final design and implementation through the County's Capital Improvement Program. This list of projects was developed using an iterative process of gathering information on several candidate stream reaches and potential retrofit sites, then evaluating the information and producing a reduced candidate list. Conceptual designs were developed for priority stream restoration and stormwater management projects.

a. Watershed Characteristics

The Cabin John Creek watershed is composed of 26.5 square miles located in southern Montgomery County. The stream flows south from the City of Rockville to the Potomac River, and is bisected by the I-495 and I-270 expressways. There are notable differences in land uses between the high density areas in the eastern portion of the watershed versus lower density areas found in the west. Because of historic land use development patterns, there exist today areas with stream channel instability, degraded aquatic habitat, and overall water quality degradation.

b. Stream Conditions

Several scientific assessments have been performed for the Cabin John Creek Watershed. These provide a background of data and help to identify areas of most severe damage. One study (the Rapid Stream Assessment Technique - RSAT) found channel erosion and deposition, water quality, instream habitat, riparian habitat, and biological indicators, with only 1 reach being rated in overall *good* condition, and the remainder in overall *fair* condition. A second assessment (the Countywide Stream Protection Strategy - CSPS) used biological monitoring results to identify the following rankings:

- rated in *good* condition – Congressional Country Club Tributary, Ken and Buck Branches;
- rated in *fair* condition – the mainstem of Cabin John Creek, Bogley Branch, Upper Old Farm Creek and Minnehaha Branch;
- rated *poor* condition – Lower Old Farm Creek, Upper and Lower Booze Creek, Beltway Branch and Snakeden Branch.

Previous assessments and findings from the Cabin John Creek Watershed Study have consistently identified increased storm flows as a major influence on the watershed's degradation. This is consistent with the biological monitoring data collected by the Montgomery County Department of Environmental Protection (DEP) which shows relatively good conditions for the western subwatersheds, while many of the more densely developed watersheds are degraded. These conditions -- *good*, *fair*, and *poor* -- are typical of those found in the other suburban areas of the County.

c. Proposed SWM Projects

A total of 22 stormwater management (SWM) sites were identified and ranked to select the top 6 SWM projects. Concept plans (30% design) were developed for the top ranked sites to evaluating the project's feasibility and cost. Two of the top SWM sites, Fox Hills of Potomac and Washington Science Center, are recommended for further design at an estimated construction cost of $ 35,067; while the Executive Boulevard site will require further detailed analysis to determine the project's feasibility. The remaining 3 priority sites, Pine Knolls, Cabin John Shopping Center, and Tuckerman 1 are not recommended for further design due to site constraints or limited environmental benefits (see Appendix VII).

d. Stream Restoration

Based on the ranking process (see Appendix VI) a preliminary list of 40 stream reaches in 12 subwatersheds was later reduced to 16 reaches. These 16 reaches, totaling 13.5 miles of stream length, were field reviewed and conceptual restoration design plans were developed with an estimated construction cost of $4,360,000.00. These 16 projects were prioritized for future implementation. An additional 25 miles of stream were assessed in less detail in priority subwatersheds. These reaches were assessed for potential small scale projects that could be undertaken by volunteer citizen groups or government agencies (more than 100 of these small scale projects were identified). The 16 final stream restoration projects, 2 SWM retrofit projects, and 1 SWM project selected for further detailed analysis will be included in the County's Capital Improvement Program (CIP), which oversees all restoration activities.